Antimicrobial activity of otodine

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Long-Term Partners Pre-Congress Symposium / ESVD and ECVD 2010

Wednesday, 22 September 2010
ALBANI Hotel - Firenze (Italy)

PRE-CONGRESS SYMPOSIUM PROGRAM

Royal Canin, ICF and Merial, Long-Term Partners of the ESVD-ECVD, are delighted to announce that they will host a pre-congress symposium offering a day of complimentary continuing education on dermatology in the wonderful setting of Firenze.

From 9:30 Welcome coffee

ROYAL CANIN SESSION ROYAL CANIN

10:00 - 12:00 Head and Neck Pruritus in the Cat
Dr. Sophie Gilbert, DVM, PhD (New York, USA) and *Dr. Pascal Prélaud, DVM (Paris, France)*,

12:00 - 13:30 Lunch

ICF SESSION ICF

13:30 - 14:00 Use of the Tris-EDTA and Otodine in Veterinary Medicine (properties, mechanisms of action, indications, clinical study)
Dr. Giovanni Ghibaudo, DVM (Milano, Italy)

14:00 - 15:00 In vitro and in vivo studies of the antimicrobial activity of Otodine
Prof. Luca Guardabassi, DVM, Associate Professor, (University of Copenhagen)

15:00 - 15:30 Otodine ear flushing solution in the therapy of bacterial otitis: a controlled clinical study
Dr. Chiara Noli, DVM (Torino, Italy)

15:30 - 16:00 Break

ANTIMICROBIAL ACTIVITY OF OTODINE®

Dr. Guardabassi - Associate Professor of Clinical Microbiology, Department of Veterinary Disease Biology, Faculty of Life Sciences, University of Copenhagen (Denmark)

Small animal veterinarians are currently facing one of the most threatening antibiotic resistance problems ever observed in the history of veterinary medicine. During the last five years we have observed a dramatic increase in the occurrence of multidrug-resistant bacteria in dogs and cats worldwide. Some of these bacteria, especially methicillin-resistant staphylococci, are virtually resistant to all systemic antibiotics available in veterinary medicine. The characteristic multidrug resistance phenotype of these bacteria poses a serious threat to animal health and a difficult therapeutic challenge to veterinarians. In perspective this situation is further complicated by the lack of development of new antimicrobial drugs for veterinary use, which is likely to continue for many years to come.

Recent studies indicate that topical antiseptics represent a valid therapeutic approach to combat antibiotic resistant bacteria in veterinary dermatology. This presentation summarizes the results of two complementary studies of Otodine®, an ear cleanser containing 0.15% chlorhexidine and Tris-EDTA. Chlorhexidine is a biguanide compound that exerts bactericidal activity by membrane disruption and is mainly active against Gram-positive organisms. Tris-EDTA is known to improve the effects of various antimicrobials by affecting the permeability of the outer membrane in Gram-negative bacteria, thereby enhancing drug penetration into the bacterial cell. Combination of Tris-EDTA and chlorhexidine results in a synergistic effect, allowing the use of low doses of chlorhexidine that are not ototoxic.

In the first study, the *in vitro* antimicrobial activity of Otodine® was evaluated using a collection of 150 bacterial isolates representing the most common pathogens associated with canine otitis. Each microorganism was incubated for 30 minutes in serial two-fold dilutions of Otodine® and plated on nutrient agar to assess survival. The product displayed an excellent *in vitro* activity against *Staphylococcus pseudintermedius* and *Malassezia*, which were eliminated after 30 minutes of exposure to 1:64 dilution of the product. Killing of Gram-negative organisms such as *Pseudomonas aeruginosa* and *Proteus mirabilis* required lower dilutions (1:8 and 1:4, respectively). Although the concentrations required for complete killing varied considerably depending on the type of microorganism, the combination of chlorhexidine and Tris-EDTA was shown to be active against all pathogens involved in canine otitis. Interestingly, multidrug-resistant strains were equally killed by Otodine® as susceptible strains. This should be regarded as an important property since it ensures that usage of the product does not co-select for multidrug resistance.

In the second study, the *in vivo* efficacy of Otodine® as the sole form of antimicrobial treatment was investigated in 19 dog ears with clinical signs of otitis externa. The product was administered twice a day for 10 days and the efficacy of the treatment was evaluated on the basis of otoscopy, cytology and culture. In 18 cases (95%), a significant reduction in inflammation, exudation and pain was observed from day 1 to days 11 and 18 (one-way ANOVA t test, p range from 0.0564 to 0.9354). Fourteen cases (74%) were cured successfully as indicated by disappearance of all presenting symptoms, 50% or higher reduction of the clinical scores on both days 11 and 18, normal cytology and owner's satisfaction with treatment. The mid-term success rate was 63% since two of these dogs had relapses during the four weeks following the end of treatment. The results showed that Otodine® can be used successfully as a first choice for treatment of otitis externa without any additional antibacterial or antifungal therapy.

Considering the frequent recourse to antibiotics for treatment of otitis externa, the use of ear antiseptics as the sole form of antimicrobial treatment may be a useful therapeutic approach to minimize antibiotic usage and selection of antibiotic resistant bacteria in dogs. The high antimicrobial activity of antiseptics has been confirmed by following *in vitro* studies of various shampoo products. In addition to clinical efficacy and low selection potential, topical antiseptics have various advantages compared with systemic antibiotics, including their broad spectrum of antimicrobial action, complementary non-antimicrobial properties, and selective action limited to the site of application